

Introduction

Before a patient can go to surgery they must be considered for peri-operative morbidity and mortality. Emergent Surgeries are emergent and must be done emergently - regardless of the status of the patient. However, subacute and elective procedures may be more harmful than the condition they intend to treat.

Cardiac Risk

There are two things that outright **contraindicate** non-cardiac surgery: **EF <35%** (75% chance of perioperative MI) and an **MI within 6 months** (40% mortality @ 3 months vs 6% @ 6 months). Both add up to one thing: **pump failure**. Use the Goldman Index to determine cardiac risk aka how vulnerable the pump is. Do NOT memorize the table, but the attending will be impressed. Rates of perioperative complication, especially the presence of **JVD**, are the worst prognostic factor on the index. Consider **EKG**, **Echo**, **Angiogram**, or potentially a CABG before the intended surgery. If not, optimize the patient medically. What that means is get them on BB, Ace, and get them to be EUVOLEMIC. Low EF is bad. Low EF and wet is worse.

Pulmonary Risk

The problem with the lungs will be **ventilation** rather than oxygenation. It's imperative to **move the lungs** as to **remove CO₂**. Any patient with an existing pulmonary disease (**smoker**, **COPD**, fibrotic lung, asthmatic) should be evaluated. The first step is the **FEV₁/FVC** (the best prognostic indicator). Then, **Blood Gases** (low O₂ or high CO₂ is bad). You can give oxygen during surgery, so CO₂ retention is worse than low oxygen. **Smoking Cessation** should be started **8 weeks** before surgery (because congestion initially worsens) and bronchodilators should be given to optimize FEV₁ at the time of surgery.

Hepatic Risk

The liver is required to metabolize toxins and anesthesia. In cirrhotic, the Child-Pugh Score can be used to ascertain the functionality of the liver. **Bilirubin**, **Albumin**, **PT (or INR)**, **Encephalopathy**, and **Ascites** are used to determine risk. If any **one** is abnormal (without another cause such as heparin) there's a **40% mortality risk**. If all are deranged it's bad news - mortality approaches **100%**. The Child-Pugh Score is here, but please don't make an attempt to memorize it. Its intent is for determination of who should get a liver transplant, though it can be used to judge surgical risk.

Nutrition

Malnutrition is identified by a loss of **Body Weight > 20%** in a few months, an **albumin < 3** or **anergy to skin antigens**. An ancillary test is a prealbumin that will tell their current nutritional state (what's being made) versus the albumin that shows their past nutritional state (what's already made). The goal of therapy is vigorous nutritional support: **PO is better than IV** and **10 days is better than 5 days**.

Metabolic

Simply said, don't operate on anybody with **DKA** or **↑Blood Glucose**. Control bG with hydration/Insulin and ensure Urine Output before attempting surgery.

Goldman Index		Complication Risk	
JVD	11	>25	22%
MI w/i 6 mos	10	25	11%
Arrhythmia	7	12	5%
Age > 70	5	1	1%
Emergency Surgery	4		
Aortic Stenosis	3		
"Sick" Patient (ICU)	3		
Thorax/Abd Surgery	3		

FEV ₁ / FVC	↓
ABG	↑CO ₂ ↓O ₂
Smoking	Smoke

	Child-Pugh		
	1	2	3
Encephalopathy	None	A little	A lot
Ascites	None	Diuretic responsive	Diuretic Refractory
Bilirubin	<2	2-3	>3
Albumin	>3.5	2.8-3.5	<2.8
INR	<1.7	1.7-2.2	>2.2

A	B	C
5-6 Points	7-9 points	10-15 points

The MELD score is a better way (more objective) of tracking the liver; surgeons use the Childs-Pugh to put into a category for a one-time assessment for surgery.

*Albumin is where they are
Prealbumin is where they're headed*